

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) Modified perfluoroplastic, comprising a perfluoropolymer including a surface ~~modified under influence of oxygen~~ radiation-chemically or plasma-chemically modified under influence of oxygen, the surface simultaneously having -COOH and/or -COF groups and reactive perfluoroalkyl-(peroxy-) radical centers, and additional low-molecular and/or oligomeric and/or polymeric substances and/or olefinically unsaturated monomers and/or olefinically unsaturated oligomers and/or olefinically unsaturated polymers or mixtures thereof are coupled via some or all of the groups and/or to some or all of the centers, the coupling being via at least one of radical reactions, substitution reactions wherein at least one substance is coupled to ester bonds formed via reactions with the -COOH and/or -COF groups, and addition reactions.
2. (Previously Presented) The modified perfluoroplastic according to claim 1, wherein the perfluoropolymer is radiation-chemically modified under influence of oxygen.
3. (Previously Presented) The modified perfluoroplastic according to claim 2, wherein the perfluoropolymer is radiation-chemically modified with a radiation dose of more than 50 kGy.

4. (Previously Presented) The modified perfluoroplastic according to claim 2, wherein the perfluoropolymer is radiation-chemically modified with a radiation dose greater than 100 kGy.

5. (Previously Presented) The modified perfluoroplastic according to claim 1, wherein the perfluoropolymer is polytetrafluoroethylene.

6. (Canceled)

7. (Currently Amended) The modified perfluoroplastic according to claim [[6]] 1, wherein olefinically unsaturated monomers and/or olefinically unsaturated oligomers or olefinically unsaturated polymers are coupled to the reactive perfluoroalkyl-(peroxy-) radical centers through (co-) polymerization and/or through grafting.

8. (Canceled)

9. (Currently Amended) The modified perfluoroplastic according to claim [[8]] 1, wherein at least one additional functional group is bonded to the at least one substance coupled via ester-and/or-amide bonds.

10. (Currently Amended) The modified perfluoroplastic according to claim [[6]] 1, wherein via reactions with the -COOH- and/or -COF groups, aliphatic amino compounds and/or aromatic amino compounds and/or alkylaryl-amino compounds are coupled to at least one further primary and/or secondary amino group or at least one further reactive or reactively modifiable or reactively activatable functional group.

11. (Previously Presented) The modified perfluoroplastic according to claim 10, wherein as further reactive or reactively modifiable or reactively activatable functional group carboxylic acid anhydride, carboxylic acid anhydride derivative, which can also be recycled as dicarboxylic acid and/or carboxylic half-ester compound to anhydride, -COOH, -CO-halogen, -COOR, -CO-

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OOR, -O-CO-OR, -SO₃H, -SO₂NRR*, -SO₂N₃, -SO₂-halogen, aliphatic and/or aromatic -OH, aliphatic and/or aromatic -SH, (meth-)acrylic ester, allyl and other olefinically unsaturated polymerizable compounds and/or polymers, cyanohydrin, -NCO, -NH-CO-OR, -NH-CS-OR, -NR*-CO-NR**R***, -N*-CS-R**R***, -CHO, -COR are coupled, and R, R*, R** and/or R*** are alkyl-X_m, aryl-X_n or alkylaryl-X_o, or R, R*, R** and/or R*** bonded to N are H, and X is the same or also different functional groups and with m, n and o being numbers greater than or equal to 0.

12. (Previously Presented) The modified perfluoroplastic according to claim 6 wherein olefinically unsaturated monomers and/or olefinically unsaturated oligomers or olefinically unsaturated polymers are coupled with the reactive perfluoroalkyl-(peroxy-) radical centers by (co-)polymerization and/or by grafting and at least one substance is coupled with ester and/or amide bonds produced via reactions with the -COOH and/or -COF groups and via reactions with the -COOH- and/or -COF groups, aliphatic amino compounds and/or aromatic amino compounds and/or alkylaryl-amino compounds are coupled with at least one further primary and/or secondary amino group or at least one further reactive or reactively modifiable or reactively activatable functional group.

13. (Currently Amended) Method for producing a modified perfluoroplastic comprising a perfluoropolymer including a surface ~~modified under influence of oxygen~~ radiation-chemically or plasma-chemically modified under influence of oxygen, the surface simultaneously having -COOH and/or -COF groups and reactive perfluoroalkyl-(peroxy-) radical centers, and additional low-molecular and/or oligomeric and/or polymeric substances and/or olefinically unsaturated monomers and/or olefinically unsaturated oligomers and/or olefinically unsaturated polymers or mixtures thereof are coupled via some or all of the groups and/or to some or all of the centers,

the coupling being via at least one of radical reactions, substitution reactions wherein at least one substance is coupled to ester bonds formed via reactions with the -COOH and/or -COF groups, and addition reactions, the method comprising reacting a perfluoropolymer that is radiation-chemically or plasma-chemically modified under influence of oxygen, which perfluoropolymers simultaneously exhibit -COOH and/or -COF groups and reactive perfluoroalkyl-(peroxy-) radical centers, with low-molecular and/or oligomeric and/or polymeric substances and/or olefinically unsaturated monomers and/or olefinically unsaturated oligomers and/or olefinically unsaturated polymers by at least one of substitution reactions wherein at least one substance is coupled to ester bonds formed via reactions with the -COOH and/or -COF groups and/or by addition reactions, and and/or by radical reactions.

14. (Previously Presented) The method according to claim 13, wherein the perfluoropolymer is radiation-chemically modified.

15. (Previously Presented) The method according to claim 13, wherein the perfluoropolymer is radiation-chemically modified with a radiation dose greater than 50 kGy.

16. (Previously Presented) The method according to claim 13, wherein the perfluoropolymer is radiation-chemically modified with a radiation dose greater than 100 kGy.

17. (Previously Presented) The method according to claim 13, wherein the perfluoropolymer comprises PTFE in compact or powder form.

18. (Currently Amended Presented) The method according to claim 13, wherein the radiation-chemically modified perfluoropolymer comprises perfluoropolymer powder, and the perfluoropolymer powder is treated through subsequent tempering at low temperatures receiving the -COF groups and the reactive perfluoroalkyl-(peroxy-)radical centers.

19. (Previously Presented) The method according to claim 18, wherein the radiation-chemically modified perfluoropolymer powder is treated by subsequent tempering with humid air.

20. (Previously Presented) The method according to claim 13, wherein the radiation-chemically modified perfluoropolymer with reactive perfluoroalkyl-(peroxy-) radical centers is reacted with olefinically unsaturated monomers and/or olefinically unsaturated oligomers and/or olefinically unsaturated polymers.

21. (Previously Presented) The method according to claim 13, wherein the -COOH and/or -COF groups are reacted at temperatures $>150^{\circ}\text{C}$ with low-molecular and/or oligomeric and/or polymeric substances that contain primary and/or secondary amino groups and/or hydroxy groups and/or amide groups and/or urea groups and/or isocyanate groups and/or blocked/protected isocyanate groups and/or urethane groups and/or uretdione groups, with at least one other functional group in the (macro-) molecule, which are capable of chemical consecutive reactions.

22. (Previously Presented) The method according to claim 21, wherein the -COOH and/or -COF groups are reacted at temperatures $>150^{\circ}\text{C}$ in a reaction with low-molecular and/or oligomeric and/or polymeric substances that contain primary and/or secondary amino groups and/or hydroxy groups, with at least one other functional group in the (macro-) molecule, which are capable of chemical consecutive reactions.

23. (Previously Presented) The method according to claim 13, wherein the -COOH and/or -COF groups are reacted at temperatures $>150^{\circ}\text{C}$ in a reaction with low-molecular and/or oligomeric and/or polymeric substances that contain hydroxy groups and/or epoxy groups, with at least one other functional group in the (macro-) molecule, which are capable of chemical consecutive reactions.

24. (Previously Presented) The method according to claim 13, wherein the -COF groups are reacted with a lactam compound or an alcohol compound.

25. (Previously Presented) The method according to claim 13, wherein the -COOH and/or -COF groups are reacted at temperatures $\geq 200^{\circ}\text{C}$ with low-molecular and/or oligomeric and/or polymeric substances that contain amide groups and/or urea groups and/or isocyanate groups and/or blocked/protected isocyanate groups and/or urethane groups and/or uretdione groups, with at least one other functional group in the (macro-) molecule, which are capable of chemical consecutive reactions.

26. (Previously Presented) The method according to claim 13, wherein the radiation-chemically modified perfluoropolymer powder with reactive perfluoroalkyl-(peroxy-)radical centers is reacted with olefinically unsaturated monomers and/or olefinically unsaturated oligomers and/or olefinically unsaturated polymers, and the -COOH and/or -COF groups are reacted at temperatures $> 150^{\circ}\text{C}$ with low-molecular and/or oligomeric and/or polymeric substances that contain primary and/or secondary amino groups and/or hydroxy groups and/or amide groups and/or urea groups and/or isocyanate groups and/or blocked/protected isocyanate groups and/or urethane groups and/or uretdione groups, with at least one other functional group in the (macro-)molecule, which are capable of chemical consecutive reactions, or the -COOH and/or -COF groups are reacted at temperatures $> 150^{\circ}\text{C}$

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in a reaction with low-molecular and/or oligomeric and/or polymeric substances that contain hydroxy groups and/or epoxy groups, with at least one other functional group in the (macro-)molecule, which are capable of chemical consecutive reactions, or the –COF groups are reacted with a lactam compound or an alcohol compound.